5750

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From: Commander, Naval Space Command

To: Director of Naval History (OP-09BH)

Subj: SUBMISSION OF 1997-98 NAVAL SPACE COMMAND HISTORY

(OPNAV REPORT 5750-1)

Ref: (a) OPNAVINST 5750.12F

Encl: (1) Commander's Biography

(2) Deputy Commander's Biography

(3) Technical Director's Biography

(4) Officer in Charge NAVSPACECOM DET Biography

(5) NAVSPACECOM Organizational Chart

(6) NAVSPACECOM Subordinate Activities

(7) NAVSPACECOM Brochure

1. The following command history is submitted, as requested by reference (a).

2. GENERAL HISTORY

a. **Mission**. As the naval component of the United States Space Command, the Naval Space Command uses the medium of space and its potential to provide essential information and capabilities to ashore and afloat naval forces by operating assigned systems; executing missions assigned by USCINCSPACE; advocating naval warfighting requirements in the joint arena; and advising, supporting, and assisting naval services through training and by developing space plans, programs, budgets, policies, concepts, and doctrine.

As an Echelon 2 command, Naval Space Command reports to the Vice Chief of Naval Operations and, in an additional duty capacity, to the Director of Space, Information Warfare, Command and Control (N6) and the Director of the Surface Warfare Division (N86) as Director for Space Requirements. Tasking to support Marine Corps forces comes through the staff of the Commandant of the Marine Corps (Director, Plans, Policies, and Operations). In addition, Fleet

commanders in chief are authorized a direct line of communication with the command for requesting specific operational support.

Naval Space Command provides facilities and staffs a command center — the Naval Space Operations Center (NAVSPOC) — 24 hours a day to serve as the Naval Space Control Center (NSCC) for U.S. Space Command's primary control center located at Cheyenne Mountain Air Force Station, CO.

b. **Command Organization**. Naval Space Command includes a headquarters staff and an Echelon 3 operational element collocated at Dahlgren, VA, and two component commands: the Naval Satellite Operations Center (NAVSOC), headquartered at Point Mugu, CA; and the Fleet Surveillance Support Command (FLTSURVSUPPCOM), headquartered at Chesapeake, VA.

Included in the headquarters staff are four billets for the NAVSPACECOM Detachment located at the United States Space Command headquarters at Peterson Air Force Base, Colorado Springs, CO; and two billets to perform the fleet support function of the Navy's Tactical Exploitation of National Capabilities (TENCAP) office.

A number of Navy and Marine Corps Reserve units support the command. Naval Reserve NAVSPACECOM 0166 was established in 1984, and a Marine Corps Reserve Augmentation Unit established in 1987. Naval Reserve NAVSPACECOM 0266 was established in 1990. Most recently, Naval Reserve NAVSPACECOM 0766 was established on 20 December 1998. These reserve personnel conduct their annual training with Naval Space Command and augment the command on a regular basis for exercise support.

Primary NAVSPACECOM Staff Officers, as of 31 December 1998, were:

-- RDML Thomas E. Zelibor, USN, Commander

-- Col Michael Henderson, USMC, Deputy Commander

-- Mr. Pieter Traas, Technical Director

-- CAPT John P. Horsman, USN, OIC, NAVSPACECOM DET, Colorado Springs, CO

-- Ms. Carmond Robbins, Director, Management Support Div (N1/8)

-- CAPT Robert P. Jones, USN, Director, Intelligence/Operations Div (N2/3)

-- CDR Wilbur K. Chapman, USN, Director, Logistics Div (N4)

-- CDR Denise D. Fite, USN, Director, Space Plans Div (N5)

-- CAPT Sheila McCoy, USN, Director, Information Systems Div (N6)

-- CAPT Doug Sahrbeck, USNR, Commanding Officer, NR NAVSPACECOM 0166

-- CDR Christopher Fennig, USNR, Commanding Officer, NR NAVSPACECOM 0266

-- CDR Sandy Daniels, USNR, Commanding Officer, NR NAVSPACECOM 0766

c. **Description of Mission Accomplishment**

(1) **Management Support Division (N1/8)**

MAR 97 - Submitted FY97 midyear review to Field Support Activity (NAVOP-09BF). The request included support for tracking, telemetry and commanding (TT&C) and on-orbit support for GEOSAT Follow-On (GFO) satellites, operation and maintenance of EHF satellite communication terminals and associated equipment at NAVSPACECOM and NAVSOC, and costs associated wth the decision to move the Relocatable Over-the-Horizon Radar (ROTHR) receiver site from Lajas, Puerto Rico to Ft. Allen, Puerto Rico.

APR 97 - Submitted FY 1998/99 NAVCOMPT budget submit to Field Support Activity. This submit included funding for maintaining the computer systems and networks of the NAV-SPACECOM surveillance mission system, sustaining surveillance fence electronics that have met their useful life expectancy, operation and maintenance of EHF satellite communication terminals and associated equipment at NAVSPACECOM and NAVSOC to support TT&C and on-orbit support for GFO satellites, SATCOM operational management (SOM) support for Global Broadcast System (GBS) on the UHF Follow-On (UFO) spacecraft, and COMSAT support.

SEP 97- NAVSPACECOM FY 96 overall year-end execution rate was 99.0 percent. This included command at 99.9 percent, SATCOM at 97.2 percent, MSI at 100 percent, TES at 98.6 percent, NAVSOC operations at 99.9 percent, and ROTHR counternarcotics at 93.5 percent.

FEB 98 - Submitted FY98 midyear review to Field Support Activity. This submit included support for TT&C and on-orbit support for GFO satellites, modifications to NAVSOC's Integrated Satellite Control System (ISCS) to accommodate unique GBS features for direct Fleet and Fleet Marine Force support, and software support and documentation for the Naval Space Command's mission system to ensure interoperability.

MAR 98 - Naval Space Command hosted the Interservice Space Intelligence Course (ISIOC). ISIOC is a familiarization course designed for intelligence and operations personnel whose duties involve space operations or the tactical applications of space.

MAY 98 - Submitted FY 2000/01 NAVCOMPT budget submit to Field Support Activity. This submit included funding for maintaining the computer systems and networks of the NAV-SPACECOM surveillance mission system, sustaining surveillance fence electronics that have met their useful life expectancy, operation and maintenance of EHF satellite communication terminals and associated equipment at NAVSPACECOM and NAVSOC to support TT&C and on-orbit support for GFO satellites, SATCOM system operational management (SOM) support for GBS on UFO spacecraft, and MILSATCOM plans and policy technical support.

SEP 98 - NAVSPACECOM FY 98 overall execution rate was 99.8 percent. This included command at 99.6 percent, SATCOM at 99.5 percent, MSI at 99.6 percent, TES at 96.6 percent, NAVSOC operations at 99.8 percent, and ROTHR counternarcotics at 99.9 percent.

(2) **Intelligence/Operations Division (N2/3)**

(a) Intelligence Branch (N21). Projects initiated by N21 to enhance

support to the command and operational Fleet and Fleet Marine Force units included the following:

-- JDISS. Two additional Joint Deployable Intelligence Support System (JDISS) Workstations were installed at Naval Space Command on 14 Jan 97 adding to the efficiency of the Intelligence Branch.

-- CHAMBERED ROUND. The CHAMBERED ROUND message was reconstructed to provide tailored space intelligence threat to the fleet and is now known as the Space Intelligence Threat (SPIT) message. The SPIT is tailored to each battle group (BG), from the time it enters its AOR through the end of its deployment.

-- NAVSPACECOM Home Page. A Naval Space Command homepage was developed on the JDISS and Global Command and Control System (GCCS) with a emphasis on fleet support to the battle groups (BGs). Each BG is assigned a POC from the Intelligence Branch for continuity throughout their deployment.

-- *Space Tactics Manual*. An update of the *Space Tactics Manual* (originally published in 1992 by Naval Space Command) commenced in 1998. Once the manual is ready for production, it will be integrated into the command's homepages on both JDISS and GCCS.

-- NSCC Watch. N21 provided three personnel to qualify for the NSCC watch positions due to manning shortage. Two branch members were the first civilians to qualify for this watch as SWO and/or SSO.

-- Quick Reference Guide. N21 is developing a quick reference guide to provide an on-line historical database to support the NAVSPOC and NSCC during activations. This database is to include exercises that the command participates in and the intelligence briefs provided, products that N21 produces such as satellite information (pieces associated with launches, mission, etc.), ballistic missile information (burn times, impact points), and other miscellaneous items.

(b) Fleet Support Branch (N31). The Fleet Support Branch exists to provide operational and exercise space force enhancement and classroom instruction on Department of Defense, commercial, and other national space capabilities to support all facets of Navy and Marine Corps operations, exercises, and demonstrations. On 24 Apr 97, NAVSPACECOM's Fleet Support Division (N7) was disestablished and all fleet support functions and personnel were incorporated into the Intelligence/Operations Division (N2/3). The new Fleet Support Branch (N31) was organized into three subordinate sections: Tactical Exploitation of National Capabilities (TENCAP) (N311), Naval Space Support Teams (NSST) (N312), and Multispectral Imagery Cell (MSI) (N313). The Joint Tactical Ground Station (JTAGS) action officer billet was incorporated into the TENCAP Section.

(1) TENCAP Section (N311). Naval Space Command's Tactical Exploitation of National Capabilities (TENCAP) Section is an extension of the CNO/N632 Navy TENCAP Office. Its purpose is to enhance national systems support to the tactical and operational combat forces of the Navy and Marine Corps. In the past, this effort was directed primarily to the Space and Electronic Warfare (SEW) disciplines. However, Navy TENCAP has

expanded its scope to address Indications and Warning (I&W) systems, environmental systems, non-acoustic anti-submarine warfare, and littoral warfare areas. Specifically, Naval Space Command's TENCAP Section attempted to:

-- Improve procedures by which national system products are made available to tactical forces

-- Develop new methods for processing national systems data to increase its value to tactical users

-- Formulate new concepts for processing national systems data in support of tactical operations, and conduct tests and demonstrations under field conditions to assess the effectiveness of these concepts

-- Prepare tactical impact statements to influence the design of future national systems

Active Naval Space Command TENCAP Projects during FY97/98 included the following:

-- RADIANT BERYLLIUM. Develop and exploit hyperspectral imagery (HSI) sensors and processing for tactical purposes. Areas include: investigation of techniques and algorithms to identify and exploit unique spectral signatures for specific intelligence goals. Funding was provided to obtain NASA Lewis satellite products to help in these areas. Additionally, new sensor and processing techniques were investigated for aided target identification and better characterization of the battlespace. Several Measurements and Signals Intelligence (MASINT) initiatives, such as sub-aperture processing and spectral analysis, were advanced in support of littoral warfare. These products will be validated during exercises in FY98.

At the end of FY97, RADIANT BERYLLIUM was combined with the RADIANT CLEAR to maximize efforts in the areas of littoral warfare. This effort was intended to develop and demonstrate an all-weather, day/night capability to extract topography and bathymetric data using synthetic-aperture radar (SAR) fused with hyperspectral imagery. The project will focus on providing higher-resolution products to better characterize the battlespace and improve target detection. Spectral analysis techniques will be incorporated into terrain characterization, change detection, and defense identification.

-- RADIANT BRONZE (non-acoustic shallow-water ASW detection)

- In conjunction with Los Alamos National Lab and Naval Research Lab (NRL), the Remote Low-Light Imaging System (RULLI) was integrated and demonstrated in the Southern California Operation Area (SOCAL). The system flew successfully and was able to detect bioluminescence effects caused by swimmers, small craft and sea mammals.

- Sponsored NIMA in the development of submarine readiness evaluation algorithms.

- Investigated the use of hyperspectral imagery sensor with the ORASIS processing algorithm to aid in the detection of shallow water submarines.

-- RADIANT CLEAR (littoral and expeditionary warfare support)

- Integrated and successfully demonstrated the first HSI sensor on an operational aircraft during NATO Exercise DESTINED GLORY-98. The TENCAP Real-Time Image Processing System (TRIPS) was developed at NRL for Navy TENCAP. The products produced during this exercise included Terrain Classification Maps, anomaly detection products and in conjunction with advanced radar techniques was used in identifying Camouflage Concealment and Deception (CC&D) targets. Additionally special radar techniques were demonstrated that aided in the characterization of the littoral battlespace. These radar techniques have been transitioned and are now available as standard products.

- Supported the installation, use and exploitation of the TRIPS sensor on a Navy P-3 aircraft in SOUTHCOM AOR.

- Completed and distributed a Littoral Warfare Collection Manager guide for use by military collection managers to optimize existing national systems in support of expeditionary warfare. Additionally, this guide was incorporated into the JTENS manual.

- Supported the Naval Post Graduate School's IR utilization study for the detection of beach defenses.

- Developed a draft CONOPS for the utilization of HSI products and TRIPS sensors.

-- RADIANT ELM. Improve precision strike mission planning through more effective use of national systems data. TENCAP participated in Special Project SANDSTORM 97, a JCS-sponsored exercise that demonstrated potential improvements to support from the interaction of theater and national reconnaissance systems.

-- RADIANT WHITE. Develop and demonstrate the tactical utility of transportable, Global Positioning System (GPS)-based reference emitters to improve national system targeting and geolocation accuracy. TENCAP supervised the design and construction of the second generation of locally tunable reference emitters. RADIANT WHITE received MERIT funding to continue development of a remotely tunable reference emitter.

-- RADIANT WHITE/GICORE (Geolocation of low-range VHF [LVHF] signals of interest)

- Participated in Precision Strike Targeting System (PSTS) and Airborne Overhead Interoperability Task Force (AIOTF) Prairie Dog evaluation. The results from these evaluations resulted in significantly improved geolocation fixes of LVHF signals.

- Developed a draft CONOPS for the use and integration of this capability into the current SIGINT system architecture.

-- RADIANT GOLD. Improve support to theater missile defense (TMD). Several sub-efforts include refining data and developing data-sharing communications between Tactical Detection and Reporting (TACDAR), Attack Launch Early Reporting to Theater (ALERT), and JTAGS for better data fusion; exploring various methods to provide more accurate cueing data to the Aegis weapon system; providing organic JTAGS capability to the numbered Fleet commanders; and providing development and implementation planning assistance for the next

generation Space-Based Infrared System (SBIRS).

-- RADIANT SAPPHIRE. (Geolocation of special signals)

- Phase I demonstration was completed during AOITF PRAIRIE DOG evaluation. Results were successful and show that this technique to geolocate special signals is worthy of further study.

(2) Naval Space Support Teams (N312). The Naval Space Support Teams (NSSTs) remained organized into three distinct teams with specific target audiences. The Atlantic Fleet Support Team provided training and operational support to Commander Second Fleet and Commander Sixth Fleet. The Pacific Fleet Support Team provided support to Commander Third Fleet, Commander Seventh Fleet, and Commander Fifth Fleet. The Marine Corps Support Team provided support to six of seven Marine Expeditionary Units worldwide. Dedicated pre-deployment training was presented to every deploying aircraft carrier battlegroup, amphibious readiness group, and Marine Expeditionary Unit. Formal academic training was also conducted at joint and service schoolhouses. NSSTs deployed 1,368 man-days in FY97. Average deployment time was 10.4 days deployed per month per person. 65 percent of deployed time was directly in support of the Fleet/FMF operations, training, and exercises. 23 percent of deployed time was for internal training. 12 percent deployed time was for conferences and other work-related travel. FY98 saw a decline in deployed man days to 960. Average deployment time per month per person decreased in proportion to lost team members to 6.5. However, direct support to Fleet/FMF customers remained steady at 68 percent. 17 percent of deployed time was for internal training, and 15 percent of deployed time was for conferences and other work-related travel.

NSSTs became increasingly more involved in exercises at the joint, component, and unit levels. They participated in all phases of exercise planning and execution, establishing space-related items for the Master Scenario Events List (MSEL), providing input for the development of Operations Plans (OPLANS), and deploying to augment joint and component staffs. During operational deployments, the NSSTs assisted with the installation, troubleshooting, and operation of situational awareness tools such as Tactical Receive Equipment (TRE) and Situational Awareness Beacon With Reply (SABER). NSST members also monitored and operated TMD warning networks, conducted TMD exercise attack operations, facilitated receipt and distribution of MSI and national imagery products, and fielded a wide variety of satellite communications, navigation, and I&W queries.

Specifically, NSST members performed the following functions:

-- Provided formal space awareness, education, and training to every deploying CVBG, ARG, and MEU

-- Provided operational space support to Joint Task Force and maritime component commanders during exercises and real world contingencies

-- Provided operational space support during Fleet/FMF pre-deployment workups

-- Provided on-call direct/remote support during deployments

-- Provided operational assessments/demonstrations of TENCAP projects

-- Coordinated with Joint Space Support Team (JSST) and other component SSTs

-- Assessed space support doctrine

-- Facilitated and provided online fingertip access to space information via GCCS and SIPRNET technologies

Naval Space Support Teams presented the Space Tactics Awareness Brief (STAB) and NAVSPACECOM overview to the Naval War College, the Army War College, the Inter-Service Space Intelligence Operations Course, the Joint Command and Control Warfare Course, the USMC Command and Control Systems Course, and the USMC Amphibious Warfare School. In addition to the deploying audiences, it is estimated that well over 1,350 personnel received the STAB in FY97. FY98 audiences declined to less than 1,000 as expected, due to the repetitive nature of fleet customers. The Naval Postgraduate School received dedicated communications systems and architecture instruction from the NSST. Additionally, the NSST participated in 28 joint and service exercises. Exercise participation familiarized senior leadership with the kinds of information available from today's space systems, the tactical leverage that can be garnered from that information, and the products and services offered by Naval Space Command.

Teams supplied tailored training outside of the classroom to include most Fleet commanders and their subordinate commands. The Theater Space Operations Cell (TSOC) was formally incorporated into a standard support concept for both contingencies and exercises. TSOC allowed deployed NSSTs to acquaint key audiences with space system capabilities, and through modeling and simulation, permitted them to evaluate various key options on space-related issues during operational planning and execution. Component OPLANS were reviewed for technical accuracy and potential for enhancement. NSSTs also reviewed numerous joint doctrinal publications, updated the Naval Space Command *Naval Warfighter's Guide to Space*, and maintained a current and accurate template for OPLAN Annex N.

NSSTs provided the U.S. Space Command Liaison Officer (LNO) from August 1997 through November 1997 and November 1998 through March 1999 to the Commander, Combined Joint Task Force Southwest Asia (CJTF-SWA) conducting Operation SOUTHERN WATCH. The primary responsibility of the CJTF-SWA Space LNO is to ensure prompt delivery of critical, time-sensitive TMD warning information to U.S. and coalition forces in theater, and provide force enhancement products and services to the Operations, Intelligence, and Planning staff. The Space LNO also orchestrated the monthly series of TMD exercises conducted by CJTF-SWA.

NSSTs provided a wide variety of services ranging from technical systems assistance and instruction to pre-deployment presentations tailored for specific naval areas of operation. They took training to the warfighter, ashore and underway. They deployed TENCAP projects to the field to test operational utility, collected valuable customer feedback, and skillfully articulated Fleet requirements within Navy programming arenas. Team members seized every opportunity to make face-to-face contact at all organizational levels of the Navy and Marine Corps, and throughout all phases of at-home training and deployment. Interacting with junior enlisted through senior officer levels, traveling and communicating literally around the globe, they have taken the latest technological advancements of the space community and delivered them into the

hands of the naval warfighter.

(3) Multispectral Imagery Cell (N313). In 1997, the MSI Cell provided over 3,400 tailored imagery products to Fleet and Fleet Marine Force customers. In 1998 that number rose to 4,976. With over 2,000 imagery scenes on file, distribution was as follows:

1997

45% Deployed Forces

25% Major Staff Commands

12% Training

10% Research and Development

7% Naval Space Support

1% Others

1998

39% Deployed Forces

2% Major Staff Commands

32% Training

13% Research and Development

5% Naval Space Support

9% Others

These products supported real-world operations such as:

- Operation JOINT ENDEAVOR

- Operation DESERT THUNDER

- Operation DELIBERATE/JOINT GUARD

- Operation DENY FLIGHT

- Operation SOUTHERN WATCH

In addition, NAVSPACECOM's MSI Cell products were provided to support planning for noncombatant evacuation operations (NEO) in Albania, Zaire, Rwanda, Sierra Leone, Jakarta, Indonesia, Eritrea, Ethiopia, and Bungule, Kenya.

Exercises supported include:

- ULCHI FOCUS LENS (UFL) 97

- RIMPAC 98

- UNIFIED ENDEAVOR 97-1

- ULCHI FOCUS LENS 98

- UNIFIED ENDEAVOR 97-2

- UNIFIED ENDEAVOR 97-3

- ROVING SANDS 97

- USACOM JTFEX 97-1

- USACOM JTFEX 97-2

N313 provided tailored imagery and topographical data to Commander Sixth Fleet in support of their Generic Area Limitation Environment (GALE) TMD initiative. Data provided included ground cover, road networks, slope, and elevation information.

The MSI Cell successfully demonstrated the effectiveness of transmitting MSI data files electronically via the Joint Broadcast System (JBS). Imagery was also ordered and disseminated via SIPRNET and RADIANT ZINC in support of Exercise UFL 97 and 98.

N313 and the Naval Space Support Teams supported several exercises utilizing TENCAP Project RADIANT ZINC. Using client/server technology and compression software to provide thumbnail views of available imagery, extremely large but compressed imagery files were successfully disseminated via relatively small bandwidth telephone communications paths. ZINC software has been distributed to the "west coast" via the NSSTs. Approximately 100 licences are available for distribution.

The MSI Cell was renamed the Remote Earth Sensing Information Center (RESIC) in 1998 and published a marketing CD-ROM that year. The CD-ROM contained the NAVSPACECOM overview briefing in HTML and PowerPoint for Windows 3.1, 95, 97 and NT. Included on the CD-ROM are almost 2,000 thumbnail images in web-page format along with all the supporting documentation a customer needs to order imagery from the RESIC. The marketing CD made its debut during AFCEA’s TechNet 98 Conference and Exhibition in Washington, DC. Since then, there have been almost 200 CD-ROMs distributed to the east and west coast Fleet and FMF customers.

The "Digital Sea-Bag" made its debut during exercise ULCHI FOCUS LENS 98. The Digital Sea-Bag is a series of CD-ROMS that are delivered by the Naval Space Support Teams to deployed forces for their use. The UFL digital sea-bag contained over 760 images and was a success.

NAVSPACECOM and RESIC provided the National Imagery and Mapping Agency (NIMA) with a proposal package and memorandum of understanding (MOU) to aid/outsource production of NIMA Compressed Aeronautical Charts (CAC) and Compressed ARC Digitized Raster Graphics (CADRG). Bids for production were due in December 1998, with contract award planned for early 1999.

(4) 1997 Exercise Participation. The Fleet Support Branch participated in and/or supported a wide variety of joint and naval exercises in FY97. Highlights are as follows:

-- PACOM JTFEX 97-1. A Joint exercise conducted in the Southern California Operating Areas, the exercise objective was to plan and execute a joint operation requiring a Regimental Marine Air-Ground Task Force (MAGTF) amphibious projection of power against hostile forces. A space operations cell was established onboard USS *Coronado* (AGF 11). NSSTs provided comprehensive space support with TSOC, critical TMD warning and attack operations with GALE and TRE/S-TRED. RADIANT CLEAR was demonstrated and evaluated for its utility in the littoral environment. One JTAGS operator was provided to augment the crew of USS *Chosin* (CG 65) in the first operational test of TMD data dissemination via EHF.

-- Exercise HUNTER WARRIOR took place on 15 Feb-16 Mar. NSST provided SATCOM and SABER-related space information as well as GALE support to COMTHIRDFLT onboard USS *Coronado*. NSST coordinated and assisted 13th MEU with installation and removal of SABER equipment while training MEU TCO operators on the command and control terminal.

-- BLUE FLAG took place on 19-27 Feb. NSST provided TDDS/TIBS (TRAP Data Dissemination System/Tactical Information Broadcast Service) to NAVCENT Rear via RADIANT HAIL, a portable TDDS reception and display system. With the cooperation of Naval Research Laboratory, two RADIANT HAIL remote terminals were connected via fiber optic LAN, to further disseminate TDDS information.

-- ACOM JTFEX 97-2 took place 3-21 Mar and centered on the USS *John F. Kennedy* Battlegroup, USS *Kearsarge* ARG, and 24 MEU. NSST members coordinated with ACOM and C2F for remote JTAGS support from Barksdale AFB, LA. One of the greatest successes of the exercise was the advent of fingertip access to MSI support, Global Positioning System (GPS), COMSAT, Defense Support Program (DSP) coverage, satellite vulnerability (SATVUL) data and weather links via SIPRNET and the Naval Space Command Homepage.

-- NSST supported the USS *Nimitz* Battlegroup, USS *Peleliu* ARG, and 13 MEU during PACOM JTFEX 97-2 from 14-24 Jul. From the initial planning conference (IPC) to end of the event, NSST members were involved in every facet of the exercise. NSST assisted COMTHIRDFLT in the execution through a dedicated space cell and TMD augmentation. NSST developed scenarios for Intel, Comms/C4I, and TMD. Jamming effects on national electronics intelligence (ELINT) systems were assessed and possible Geolocation of Radio Frequency Interference (GOFR) participation was explored. Settings for Standard Tactical Receive Equipment Display (S-TRED) filters were developed as well.

-- ROVING SANDS 97 took place from 17-28 Apr. Joint Project OPTIC COBRA and TENCAP Special Project SANDSTORM took place simultaneously under the umbrella of ROVING SANDS. NSSTs provided Mobile TRE/STRED support to the Aegis Training Center at Dahlgren, and additional members augmented NAVCENT Rear in Fort Bliss, TX with space expertise, MSI via RADIANT ZINC, and TRAP/TIBS connectivity via RADIANT HAIL.

-- CENTRAL ENTERPRISE took place from 1-21 Jun. NSST supported USEUCOM's Theater Missile Defense (TMD) cell in Siegen, Germany and USS *Cape St. George* (CG 71) and

USS *Anzio* (CG 68) participating in BALTOPS. NSST provided critical TMD battlespace management and both passive and defensive early warning for attack operations. Technical assistance was also given to *Anzio* and *Cape St. George* in support of their Aegis TMD efforts.

-- KERNEL BLITZ took place from 20 Jun-3 Jul. A joint exercise conducted in the Southern California Operating Areas, the goal was to plan and execute a joint operation requiring regimental MAGTF amphibious forces for power projection against a hostile regional power. NSST members integrated TMD scenarios and CJTF, Commander Amphibious Task Force (CATF) and USMC Commander Landing Force (CLF) embarked onboard USS *Coronado*. The exercise showcased TMD in a complex amphibious warfare scenario. NSST members implemented a space operations cell onboard *Coronado* providing comprehensive space support and technical and operational expertise using TSOC, GALE, and TRE/STRED.

-- JOINT WARFARE INTEROPERABILITY DEMONSTRATION (JWID)-97 took place

6 Jul- 2 Aug. JWID is a series of annual demonstrations focused on providing the joint warfighting community with innovative advances in C4I systems. NSSTs provided support to the Operational Support Office (OSO) demonstrating new and emerging technologies. Members served as operators, evaluators, and demonstrators aboard USS *John C. Stennis* (CVN 74) and at the JFACC in Barksdale AFB, LA.

-- ULCHI FOCUS LENS (UFL)-97 took place 18-29 Aug in CONUS and the Korean Peninsula. UFL is an annual joint/combined exercise conducted in conjunction with the Republic of Korea's national mobilization exercise. NSSTs deployed to provide TRE/STRED connectivity and space expertise to the Naval and Marine Component Commanders ashore, augmented the JSST at the Seoul Command Center, and deployed aboard USS *Blue Ridge* (LCC 19) to support Commander, Seventh Fleet. Deployed NSSTs provided space expertise, TMD warning, GPS and satellite vulnerability analyses, and facilitated ordering and delivery of MSI products.

(4) 1998 Exercise Participation. The Fleet Support Branch participated in or supported a wide variety of joint and naval exercises in FY98. Highlights are as follows:

-- PACOM JTFEX 98-1. A Joint exercise conducted in the Southern California Operating Areas, the exercise objective was to plan and execute a joint operation requiring a Regimental Marine Air-Ground Task Force (MAGTF) amphibious projection of power against hostile forces. A space operations cell was established onboard USS *Coronado* (AGF 11). NSST provided TMD warning recommendations for attack operations with GALE, JTAGS Remote and Stalker for initial warning. TRE/S-TRED was utilized for real-time tracks. GALE (MAKO) allowed the use of LOS models to better determine the SCUD launcher suitability and mobility. NSST personnel were able to integrate this new technology for the first time in this arena.

-- Exercise DESTINED GLORY took place 1-22 May in Cadiz, Spain and onboard USS *La Salle* and USS *Wasp*. This NATO exercise included EUCOM, C6F, JAC Molesworth, CTF 67 and Navy TENCAP. RADIANT CLEAR was demonstrated as well as forwarding large hyperspectral data from Rota to the JAC for further analysis and dissemination.

-- ROVING SANDS 98 was the world's largest Joint Tactical Air Operation (JTAO) Exercise. Exercise "ground truth" threat data was distributed from Ft. Bliss via the Distributed

Interactive Simulation (DIS) network. ROVING SANDS was the vehicle to plan, establish, and execute joint and combined Integrated Air Defense Systems (IADS) and intra-theater deployment and redeployment. Specifically, the Navy's strategic and tactical goals demonstrated:

- The flow of forces to the theater

- The evolution of BMC4I architectures and smooth the transfer of C2 responsibilities between Joint Force component commanders

- The integration of TBMD with other mission areas (Strike, BMC4I, TLAM). Annually NSST members support this effort through personnel and equipment augmentation to deliver exercise feeds via TRE/STRED

-- MEFEX 98 took place 19-24 Jul in El Toro, CA. NSST members were utilized to augment III MAW TMD cell. NSSTs provided TMD warning and recommendations for attack operations utilizing JTAGS remote and GALE for initial warning. Team members worked closely with NAVSPACECOM's Intel/Ops Division to support intelligence preparations of the battlespace as well as developing requests for information (RFIs) and tasked reconnaissance assets to collect against related interests.

-- ULCHI FOCUS LENS (UFL) 98 took place 15-29 Aug from CONUS and the Korean peninsula. UFL is an annual Joint/Combined exercise conducted in conjunction with the Republic of Korea's national mobilization exercise. NSST deployed to provide TRE/STRED connectivity and space expertise to the Naval and Marine Component Commanders ashore, augmented the Joint Space Support Team (JSST) at the Seoul Command Center, and deployed aboard USS *Blue Ridge* to support Commander Seventh Fleet. Deployed NSSTs provided space

expertise, TMD warning, GPS and satellite vulnerability analyses, and facilitated ordering and delivery of MSI products.

-- Exercise FUERTES DEFENSAS was a joint exercise designed to combine CINC battle staff training, the former Exercise UNIFIED ENDEAVOR, and the Army's Battle Command Training Program (BCTP) Corps Warfighter Exercise into a single exercise scenario as well as integrate

information operations into planning and operations. This three-phased event was conducted to exercise crisis action procedures and validate selected portions of the CINCSO Plans.

-- NSSTs supported and augmented CCG-2 with a space support cell in the Tactical Flag Command Center for an exercise on 10-20 Nov. A Theater Support Operations Cell was established to ensure SIPRNET connectivity for element set updates and site processing training.

(5) <u>GPS Almanac Updates</u>. The Fleet Support Branch provided daily formatted GPS almanac updates via GCCS at the request of several deployed Fleet units. Initially requested by COMCARGRU SEVEN embarked in USS *Nimitz*, GPS assessments were used for TLAM planning and were later incorporated into COMFIFTHFLEET planning for the Arabian Gulf. Naval Space Command provided the assessments on request until the capability became resident on GCCS.

(6) Supported Commands and Activities (1997/1998)

3RD MARINE AIRWING

AEGIS TRAINING/READINESS CENTER

AFCEA

ALL SERVICE COMBAT ID EVAL TEAM

CCDG 8

CINCLANTFLT

CINCPACFLT

CJTF-SWA

CNO

COMFIFTHFLT

COMPATWING ELEVEN

COMPATWING FIVE

COMPATWINGSLANT

COMSECONDFLT

COMSEVENTHFLT

COMSIXTHFLT

COMTHIRDFLT

COMUSNAVCENT

ELECTRONIC WARFARE TG LANT

FLEET INFORMATION WARFARE CENTER

HQMC

I MEF

III MEF

ISFC

ISIOC

JOINT C2W SCHOOL

MARINE FORCES EUROPE

MIDPAC

NAVAL POST GRADUATE SCHOOL

NAVAL RESEARCH LAB

NAVAL WAR COLLEGE

OPERATIONAL SUPPORT OFFICE

SAAC

SPACE ADVANCED APPLICATIONS COURSE

SUBLANT

SUBPAC

USACOM

USCENTCOM

USEUCOM

USMC AMPHIBIOUS WARFARE SCHOOL

USMC C2 SYSTEMS COURSE

USS MOUNT WHITNEY

USSPACECOM

VP 30

(7) Supported Task Forces/Battle Groups/ARGs (1997/1998)

USS THEODORE ROOSEVELT TF (CVN-71, CCG-8, CVW-3, CDS-32, CPR-8)

USS JOHN F. KENNEDY TF (CV-67, CCG-2,CVW-8, CDS-24, CPR-4)

USS GEORGE WASHINGTON TF (CVN-73, CCDG-2, CVW-1, CDS-14, CPR-2)

USS INDEPENDENCE (CV-62, CVW-5, CCG-5)

USS KITTY HAWK (CV-63, CVW-11, CCDG-5)

USS CONSTELLATION (CV-64, CVW-2, CCDG-1)

USS NIMITZ (CVN-68, CVW-9, CCG-7)

USS CARL VINCENT (CVN-70, CVW-11, CCDG-3)

USS ABRAHAM LINCOLN (CVN-72, CVW-14, CCDG-3)

USS TARAWA (CPR-3)

(c) CINC Support/Space Control Branch (N32)

NAVSPOC Reconfiguration. On 1 May 97, a ribbon-cutting ceremony was held to commemorate the completion of the NAVSPOC Reconfiguration Project. The project started a year earlier with a detailed study of tasks performed in the center. A new layout was tested in a

mockup and then implemented. The plan included enclosing all the equipment inside consoles, overhead mounting of large-screen displays, relocating noisy network routers to another room, carpeting the floor tiles, and placing individual audio panels at each watch station.

TERS Mission Completed. The Tactical Event Reporting System (TERS) was retired on

1 Apr 97. Started in July 1991, TERS reformatted tactically useful infrared information and transmitted the data to Fleet users. TERS played an important role during the Persian Gulf War in alerting units of ballistic missile attacks. The TERS mission is now being accomplished at Joint Tactical Ground Stations (JTAGS) in each theater of operation.

DB 15 Version 305. On 16 Jul 97, DB15 Version 305 became operational enhancing the computations of DB15 with auto IERS Bulletin input, run multiple times a day, Version Zero production and TFEG enhancements.

ORBVIEW-2. On 11 Aug 97, SEASTAR (ORBVIEW-2) support to Orbital Sciences from the NAVSPOC began. The NAVSPOC issued critical orbital elements data for SEASTAR in its transition to a 700-kilometer altitude. This transition had originally been estimated to take 30 to 40 days. NAVSPOC's support assisted in reducing this time to two weeks.

Vapor Comets in Space. On 12 Sep 97, the Naval Space Surveillance System, or "Fence," began providing data to the Naval Research Laboratory for the Vapor Comets in Space study.

CASSINI sent to Saturn. On 15 Oct 97, NASA successfully launched the CASSINI spacecraft on a 2 billion mile journey to the planet Saturn. The NAVSPOC, working in conjunction with U.S. Space Command, hosted software that calculated launch times that avoided known space objects during the entire flight path from take off until past the geosynchronous belt. This is a model for how NAVSPACECOM will accomplish launch support in the future.

New Orbital Theory Made Operational. On 12 Nov 97, the new orbital theory, PPT3, exited its trial period and was declared operational. This new orbital theory implements deep-space perturbation models of U.S. Space Command SGP4 model which increases the fidelity of the NAVSPOC modeling for high-altitude orbits.

NSCC Activations Increase. NAVSPACECOM's Naval Space Control Center (NSCC) saw a dramatic increase in activations in support of on-going computer testing at Cheyenne Mountain: Level II - 208.5 hours, as opposed to 314 in 1997; and Level III - 450 hours, as opposed to 81 hours in 1997. Prompted by a major failure of Cheyenne Mountain's computer system in early 1998, the NSCC was at Level III operations from 6-11 Jan 98. NSCC crews processed the lunar space mission, a SKYNET launch, two reentries, solar weather changes, and eight space maneuvers, as well as cataloged eight new objects. Cheyenne Mountain provided augmentation crews for the NSCC when they saw support would be required beyond 72 hours.

Primary Space Shuttle Support. NAVSPACECOM analysts tested revised procedures and checklists for Space Shuttle support that will enable the NSCC to provide primary space control for Shuttle operations. The command's ability to perform this mission was operationally demonstrated between 262000Z and 300001Z Jan 98 when the NSCC successfully served as the primary space control node during a Shuttle mission.

NAVSPOC Watch. Commander Naval Space Command RDML Patrick Moneymaker selected six Navy officers to stand up a 24-hour command post in the Naval Space Operations Center. The six commenced dedicated training the last two weeks of February and stood the first NAVSPOC Watch Officer (NWO) watch on 7 Mar 98.

In October, launch window screening was installed on NAVSPACECOM's mission system. This computer program allows command analysts to perform collision avoidance runs over the entire launch window. The command used this new capability to provide real-world support shortly after it was installed. The NSCC was prime during Space Shuttle mission STS-95, Senator John Glenn's return to space.

In addition, Naval Space Command continued work on efforts to support the International Space Station. This included plans to migrate to a full special perturbations based catalog, in addition to other capabilities. In support of these efforts, NAVSPACECOM received funds from both NASA and the CINC Initiative Funds.

(d) Satellite Communications Management Branch (N33)

Global Broadcast Service (GBS). Continued to prepare for NAVSPACECOM's designation and assumption of duties as System Operational Manager for the Global Broadcast System (GBS) on UFO-8, 9 and 10 (Phase II). Personnel attended Joint Staff, CNO and CINC-sponsored GBS working group meetings identifying and rectifying SOM issues. In December 1997, NAVSPACECOM representatives attended the GBS (Phase II) final design and review meeting conducted by Hughes Space and Communications division for GBS Satellite Broadcast Manager (SBM) and Primary Injection Point (PIP) operations. The UFO-8 Pacific Ocean Area SBM and PIP were operational in June 1998. POM inputs for FY00 and beyond requested funding for contractor support for the Intelligence and Operations Division (N2/3) supporting GBS operations at NAVSPACECOM. Funds were also identified to contract for one contractor for FY98 and two contractors for FY99 to support GBS SOM functions at NAVSPACECOM. In February 1998, Naval Space Command was designated SOM of the GBS/UFO-G program by the Joint Staff.

On 16 Mar 98, the first GBS payload was launched on UFO-8 covering the Pacific Theater. The Pacific Satellite Broadcast Manager (SBM) and Primary Injection Point (PIP) started testing operations in August 1998 in direct support of UFO-8/GBS Operations.

Another significant event involving GBS was the designation of NAVSPACECOM as Satellite Communications Systems Expert (SSE) in accordance with CJCSI 6250 (dated 01 Oct 98). (SSE replaced the GBS System Operational Manager (SOM) designation of CJCS MOP 37). In addition, NAVSPACECOM was also designated as the Designated Approving Authority (DAA) for GBS system. This function gives Naval Space Command overall responsibility for the security of the entire GBS system and the authority to accredit users desiring GBS service.

Naval Space Command approved the first Interim Authority to Operate (IATO) for Automated Information System (AIS) in accordance with the DISTSCAP instruction. This IATO authorized personnel in the PACOM SBM and Korean sites to test and operate the GBS system over the air.

On 20 Oct 98, UFO-9 was launched to support the Atlantic Theater with the GBS payload service.

On 16 Dec 98, expanded the PACOM IATO to include authorization for four ships to test and operate GBS systems: USS *Coronado,* USS *Blue Ridge,* USS *Kitty Hawk,* and the USS *Belleau Wood.* An additional IATO will be approved to cover NCTAMS LANT SBM under support for UFO-9/GBS service to the Atlantic and Mediterranean areas. The SBM in Norfolk was nearly complete, with testing and integration procedures with UFO-9 slated to begin in January 1999.

Commercial Satellite Communications. In January 1997, a GCCS homepage was developed to support Challenge Athena users. The homepage reflects which satellite ships are operating on, data rate, Earth station gateway, and current status. Users are also supported by a Location Finder that will give the ships the correct azimuth and elevation angles to the satellite they are assigned to operate on.

In February 1997, N33 personnel assumed responsibility for submitting transmission plans to Bandwidth Management Center, DISA CSCI, COMSAT and INTELSAT for Challenge Athena terminations supporting U.S. Navy Ships operating on leased transponders on INTELSAT D-4, 177E, 338E, and 359E satellites.

On 14 Jan 98, a contractor was hired for commercial SATCOM (COMMERSAT) support for FY98. A letter designating NAVSPACECOM as SOM for commercial satellite communications was drafted and sent to CNO for approval/designation.

NAVSPACECOM personnel successfully responded to a short-fuzed Challenge Athena requirement to put four ships on a single INTELSAT transponder in the Pacific in early July

1998. This was the first occasion that four ships were supported on one transponder and required significant coordination with industry and Navy.

Challenge Athena fleet support continued in October 1998 when NAVSPACECOM provided assistance to the USS *Mount Whitney* (LCC 20) in resolution of a satellite tracking problem on their Challenge Athena IIB terminal. Orbital analysis by NAVSPACECOM of two communications satellites in close proximity to each other assisted *Mount Whitney* in updating their terminal tracking data and ultimately reestablished their Challenge Athena service.

On 4 Dec 98, two additional contractors were assumed by NAVSPACECOM from SPAWAR for COMMERSAT support. One contractor is located at NCTAMS LANT and supports the Fleet CINCs in the Atlantic, Indian Ocean, and Mediterranean operational areas. The other contractor is located at NCTS San Diego, CA and supports CINCPACFLT.

SHF Communications. Provided a representative for the 1997 European Satellite Conference in Garmisch, Germany from 17-21 Nov 97. The purpose of the conference was to promulgate current and future initiatives with regard to satellite communications in the European Theater.

Approximately 125 personnel attended the conference to discuss problems, programs, and other important issues regarding satellite communications in general and specific to the Europe.

UHF Communications. In January 1997, coordinated the establishment of a new Joint Staff UHF publication which combined the Air Force SOP&P with NTP-2 Section II. This publication will make it easier for the warfighter to plan and use UHF communications.

In October 1997, hosted the first SMC conference in Colorado Springs, CO. This included briefings to JCS, services, and all area SMCs on the role of the SMCs. This effort developed action items to further develop SMCs in serving customers.

In March 1998, at the request of the ACOM/J6, demonstrated the ability to conduct a dual-satellite radio frequency interference (RFI) geolocation on an operational UHF satellite using UFO-1. This first-time effort, which utilized hardware available at the NCTAMS, produced a 5 by 58 nautical mile ellipse. NAVSPACECOM is working with the Joint Spectrum Center to further validate our findings and identify the exact location of the uplink interference source.

EHF Communications. In March 1998, UFO-5 had an anomaly affecting all users. The satellite had all of its user acquisition slots logged on with various terminals, however the terminals had left the AOR. In coordination with Hughes & NAVSOC, NAVSPACECOM developed a plan to terminate satellite access. The result was that the satellite returned to normal status with new users on-line. A keep-alive protocol was developed to preclude this from reoccurring.

In March and April 1998, produced EHF communication plans for USS *John F. Kennedy* and USS *Theodore Roosevelt* battle groups. These plans were created to ensure maximum allocation of the satellite resources while operating in the Persian Gulf.

In September 1998, developed a recommendation for polar satellite apportionment at the direction of the Joint Staff. This involved reviewing current resources and allocating assets to specific AORs for enhanced operational capabilities of this newly acquired asset. NAVSPACE-COM's recommendation was approved by the Joint Staff and is currently utilized on this platform.

Began work on the 1999 EHF apportionment recommendation for UHF Follow On (UFO) EHF packages, Fleet Satellite Extremely High Frequency Packages (FEP), and Polar EHF package as directed by Joint Staff. Approval of the NAVSPACECOM recommendation is expected in early 1999.

In Nov 98, coordinated the addition of the Keep Terminal Alive (KTA) protocol constellation-wide on UHF Follow On (UFO) EHF Packages, along with NAVSOC. The KTA protocol conserves satellite EHF resources. KTA ensures terminals, which have been turned off or removed from the satellites footprint, are logged off the satellite. By logging these terminals off, the KTA protocol increases resource availability for the user.

Provided technical assistance to HQ EUCOM for execution of a satellite configuration change on the UFO-7 EHF package. The configuration change was planned, coordinated between multiple commands and executed within five days.

Provided direct troubleshooting assistance to four commands in EUCOM, one command in ACOM, and two commands in CENTCOM to provide EHF Air Force ground terminal operational compatibility with the new satellite configuration.

(3) **Logistics Division (N4)**

On 2 March 1998, the Logistics and Information Systems Division (N4/6) was reorganized into two separate Divisions: the Logistics Division (N4) and the Information Systems Division (N6).

Mar 98 - A project to install a new 100-KW emergency generator, automatic transfer switch, and two 2000-gallon fuel-dispensing systems in concrete spill containments was completed at the Elephant Butte, NM Space Surveillance Field Station. Southwest Division, Naval Facilities Engineering Command awarded the construction contract and provided oversight of the project.

Apr 98 - The San Diego, CA Space Surveillance Field Station electrical distribution system and emergency generator wiring systems were reconfigured to allow the emergency generator to provide full station backup.

Jun 98 - A major renovation of the Jordan Lake, AL, Space Surveillance Operations building was completed. Electrical systems, fire detection and alarm systems, intrusion detection systems, HVAC systems, and other building components were replaced to meet current fire protection regulations, building codes, and to meet federal accessibility standards.

Aug 98 - Approximately 50 acres of excess property, located adjacent to Naval Space Surveillance Station, Brown Field, Chula Vista, CA was transferred to the Justice Department's Immigration & Naturalization Service (INS) on 3 Aug 98. The transfer of the property was completed on a no-cost basis. INS plans to use the property to support US/Mexico border patrol operations.

Nov 98 - Natural Resources Management Plans were completed for three Space Surveillance Stations under Engineering Field Division, Southwest area of responsibility. The stations covered under the plans are located at Brown Field, Chula Vista, CA; Gila River, AZ; and Elephant Butte, NM.

- Facilities and Infrastructure Y2K inventories were completed. The inventory was completed using guidance provided by CNO(N4). Assessment of components that had the potential to fail when the calendar rolls to year 2000 were completed in December. No items were found having a Y2K implication.

- A decision was made in 1998 to outsource NAVSPACECOM Space Surveillance Station environmental compliance programs to the Naval Facilities Engineering Field Divisions. Three of the nine sites were successfully outsourced through Engineering Field Division, Southwest. Outsourcing plans for the remaining six sites were initiated with an expected completion date in April 1999.

- The Engineering Branch of the Information Systems Division was relocated from Building 1700 to a 3,500-square-foot temporary trailer. This move resulted from the operational requirement of a 24-hour watch in the Naval Space Operations Center (NAVSPOC).

- The Gila River, AZ Space Surveillance Field Station Operations Building renovation was substantially completed in 1998. The project replaced electrical and lighting systems, improved energy efficiency, constructed a new operations room, constructed an electronics maintenance room, installed raised computer flooring, replaced fire detection and fire alarm systems, installed an intrusion detection system, and renovated bathroom facilities and

doorways to meet federal accessibility standards. Southwest Division, Naval Facilities Engineering Command awarded the construction contract and provided oversight of the project.

(5) **Space Plans Division (N5)**

(a) 1997 Summary

Satellite Operations. Prepared for operation of two new systems, a Polar EHF communications package and the GEOSAT Follow-On (GFO) oceanographic satellite. This included software installations and upgrades, and coordination of satellite acquisition and operations issues. Other related issues included supporting the development of a USSPACECOM Satellite Operations Mission Assessment and a Capstone Requirements Document.

Space Control Requirements. Continued to support development and staffing of USSPACECOM's Space Control Assessment and Capstone Requirements Document, providing extensive coordination with service headquarters and Fleet staffs. Also initiated the review and update of requirements documentation for NAVSPACECOM's Space Surveillance Fence and the Alternate Space Control Center.

Operations Center Support. Supported the conduct of all Crises Action Teams (CAT) activities, preparation of Lessons Learned, and the development of standard procedures and practices for the conduct of exercises. Helped define concepts for a 24-hour NAVSPOC watch and operations.

Naval Postgraduate School - MILSATCOM Systems and Application Course. Developed and presented a graduate-level systems engineering and operations course designed to provide needed information on all issues related to the naval use of MILSATCOM. This 32-hour course covers all aspects of the requirements, use, and implication of satellite communications for naval forces. The first presentation of the course was given during the fall quarter (Oct-Dec 97).

Emerging Requirements Data Base (ERDB). Developed the naval input to the MILSATCOM Emerging Requirements Data Base. The ERDB is a 2010 SATCOM requirements data base used to assist in planning and sizing the future MILSATCOM architecture. During modeling and simulation of proposed architectures, the requirements in the ERDB are loaded against the proposed architecture for a Defense Planning Guidance derived warfighting scenario to determine the ability of the architecture to satisfy the 2010 requirements. Additionally, the ERDB provides a reference point for senior decision makers in approving funds for future C4I systems.

Mobile User Study (MUS). The Navy was tasked by the Deputy Under Secretary of Defense for Space (DUSD-Space) to lead a joint study to capture and define the narrowband (64 Kbps, no protection) SATCOM requirements (predominately tactical requirements that support the mobile warfighter), to define a Gapfiller architecture strategy to transition the aging UHF constellation to an advanced narrowband system and to consider options for the advanced narrowband system. Naval Space Command was designated lead for the Requirements Working Integrated Product Team (WIPT). N5 hosted WIPT meetings on 18-20 March, 16-17 April, 20-21 May, and 11-12 June 1997. During these meetings, representatives from Army, Navy, USMC, USAF, Joint Staff, DISA, NRO, Joint Spectrum Center, and other government agencies studied joint mobile user SATCOM requirements for the 1998-2017 timeframe.

The MUS merged the Emerging Requirements Data Base (ERDB) inputs for all uniformed services/agencies for 64 Kbps and below and came to consensus on the top 20 priorities for Mobile SATCOM, describing the top-level warfighting requirements. The group prioritized and defined the requirements in such a way that the warfighting impact of those requirements can be considered in the design iterations of any future architecture. The MUS Requirements Working Integrated Product Team reviewed all commercial SATCOM systems and alternate communication nodes (ACN) (e.g., UAVs and balloons) that could support the mobile user, to evaluate their capability of satisfying prioritized Mobile User requirements. MUS results are used to aid decision makers at the Senior Warfighters' Forum (SWarF), the Joint Requirements Oversight Council (JROC), and to support engineering and costing efforts for the Gapfiller and advanced narrowband architectures. This joint effort will support DUSD (Space) transition planning working groups now developing future MILSATCOM requirements and system architectures.

MILSATCOM Briefings. In May, briefed the Navy Copernicus Requirements Working Group (CRWG) on the MILSATCOM Mobile User Study (MUS) and Emerging Requirements Data Base (ERDB) process in San Diego, CA. In June, presented a MILSATCOM requirements brief at the MILSATCOM Terminal and Ground Control Technology Seminar in McLean, VA. In November, presented a brief on narrowband SATCOM at the ARC-210 User's Conference in Orlando, FL.

EHF. Completed the final update of the MILSATCOM EHF Requirements Database and provided input to DISA.

UHF. Conducted an extensive evaluation of the impact of the UHF Gapfiller architecture on low-data-rate netted communication requirements for the Mobile User Study (MUS). Representatives from Army, Navy, and Air Force coordinated with Aerospace Corporation, reviewing MILSATCOM Architecture Study Tool (MAST) modeling results and assessing warfighting impact. This data, along with results of the UHF gapfiller, was presented as part of the MUS briefing to the SWarF in June 1997.

Developed and distributed to the joint user community the UHF Follow-On (UFO) System Control and Operations Concept (UFO SCOC). Developed by NAVSPACECOM as the system operational manager for UFO, the document describes UFO's UHF and EHF SATCOM capabilities and establishes procedures for system control and resource management.

GBS. Initiated an informal Navy GBS Operations working group that included representatives from NAVCOMTELCOM, NAVSOC and CNO/N631 to consider how the Navy would operationally manage the Global Broadcast Service (GBS). The group discussed issues related to organization responsibilities, funding requirements and system control.

Naval SATCOM Industry Day. Sponsored the Naval SATCOM Industry Day on 22 Oct 97 for over 200 industry representatives and 50 military attendees. The conference conveyed to industry an understanding of the naval vision for implementing a "network centric" SATCOM architecture in support of Joint Vision 2010. This will allow industry to better respond to DoD needs in the development of new SATCOM technologies and systems. The keynote address on network centric warfare and naval SATCOM requirements was given by VADM Arthur Cebrowski (CNO/N6).

JIPT. Attended the initial coordination meeting that established the Joint Integrated Product Team (JIPT) for the MILSATCOM Mobile User Study. The JIPT was chaired by CNO/N6B and PEO-SCS with participation by USCINCSPACE, Army, Navy, USMC, USAF, and other agencies. The JIPT represented the senior leadership overseeing the work of three Working Integrated Product Teams (WIPTs) for requirements, systems engineering, and acquisition.

(b) 1998 Summary

Polar EHF SATCOM. Initiated quarterly reviews for Navy to resolve acceptance criteria for the Polar 1 payload which was activated in 1998 and to plan for Polar 2 and 3 launches scheduled in 2003 and 2005, respectively. The Polar EHF packages are onboard classified host satellites.

Space Control Requirements. Continued to support the development and staffing of USSPACECOM's Space Control Assessment and Capstone Requirements Document, providing extensive coordination with the Services Headquarters and Fleet staffs.

Commercial SATCOM. Participated in the joint Mobile Satellite Services (MSS) working group. Monthly meetings were held by DISA to discuss issues related to DoD use of emerging MSS systems (e.g.,IRIDIUM).

Submitted a significant update of future Naval EHF requirements to DISA. This input is in the form of the Joint MILSATCOM ERDB Version 5.0 dated 01 April 1998.

Mobile User Objective System (MUOS). Continued to refine the requirements for the MUOS through meetings with joint community. In September 1998, CNO N61 tasked Naval Space Command to develop the MUOS Operational Requirements Document (ORD). By December 1998, Naval Space Command had gained joint consensus on a draft ORD to include a set of Key Performance Parameters (KPP).

OPNAV-LED Bandwidth Baseline Assessment Memorandum (BAM). Participated in this study by providing the SATCOM requirements sets for 2005 and 2010. The BAM working group validated the 2005 requirements as the vision for where Navy wants to be and identified the delta between what capabilities has been programmed for and the goal contained in the 2005 requirements set.

2005 SATCOM Requirements Assessment Project (SRAP). Began work on this project which involves modeling the anticipated 2005 DoD SATCOM architecture, loading a 2005 set of naval SATCOM requirements into the model and simulating a Defense Planning Guidance (DPG) Major Theater War (MTW) scenario. The results of this assessment should highlight any shortfalls of the anticipated architecture in meeting Navy's SATCOM requirements. The goal is to provide OPNAV and other decision makers with a rigorous analysis to assist in deciding where to best put our limited financial resources.

MILSATCOM Briefings. In September, briefed a Joint Range Extension (JRE) Integrated Product Team on options to extend the range of the Tactical Data Link J (TADIL-J)/Link-16 network to beyond-line-of-sight using satellite communications. The JRE program will provide a data forwarding function between line-of-sight only TADIL-J/Link-16 zones, regions and networks using some combination of satellite and terrestrial connectivity. The JRE will formally be located at Theater Air and Missile Defense nodes that have access to both the Link-16 and

long-haul communications networks. Chaired by PMW 159, the JRE IPT discussed a variety of programmatic and operational planning issues, including development of the operational requirements document.

In June, participated in the Defense Satellite Communications System Program Management Review at DISA. NAVSPACECOM's SATCOM Plans & Policy Branch (N52) presented a briefing on the Naval Concept of Operations for SHF dual carrier operations. This CONOP addresses the new dual-RF carrier capability being installed on Naval flagships and how that function may be integrated into the Standardized Tactical Entry Point operations.

In June, coordinated the use of ephemeris data and information messages developed by NAVSOC with GBS Joint Program Office (JPO), NCTAMS PAC, and the Pacific SBM facility for GBS receive suite set up and satellite acquisition. Coordinated the modification, upgrade and installation of appropriate adaptation tables for EHF terminals and NCTAMS PAC Wahiawa and NAVSOC Det "C" (Guam) spot beam pointing. Additionally, N5 coordinated inter-command resource requirements, roles, and responsibilities with COMNAVCOMTELCOM, CNO (N64), and GBS JPO on the impending standup of Naval Space Command as the GBS designated approval authority.

Visit by Army Space Command. Coordinated a visit by Army Space Command personnel to Naval Computer and Telecommunications Master Station (NCTAMS) LANT on 20-21 Apr. N5 escorted representatives from the Defense Satellite Communications System (DSCS) operations centers and HQ 1ST Satellite Control Battalion on tours at NCTAMS LANT facilities and in the communications spaces aboard USS *Eisenhower*, USS *Mount Whitney*, and USS *Saipan*. This was a valuable step in advancing cooperation between Navy shipboard SHF operators, NCTAMS technical controllers, and Army Space Command's DSCS control community.

Naval SATCOM Course. Presented this course to a predominately Navy audience 18-22 May. The course provided fleet personnel with detailed information on all aspects of DoD use of satellite communications. Some 90 personnel from Naval and other DoD commands attended this course and rated it highly for content and presentation.

EHF. Participated in the Advanced EHF (AEHF) Requirements Review group meeting. The Air Force Space and Missile Systems Center's report on the AEHF Cost as an Independent Variable (CAIV) process and approval of a CAIV plan was reviewed. Included was a brief by Joint Staff (J8) on the current status of the general officer review of the final draft AEHF ORD and the schedule of events leading to JROC in January 1999.

Facilitated a Navy Polar EHF SATCOM meeting in Dahlgren on 2 Dec. Polar EHF SATCOM includes a host satellite with EHF payload on orbit now (Polar 1) and two similar satellites that the host organization will launch within the next 6 years. Representatives from NAVSPACE-COM, CNO, the host organization, Naval Undersea Warfare Center (NUWC), and NAVSOC identified actions required to achieve full acceptance of Polar 1.

The EHF SATCOM Operations Branch provided technical assistance and a capabilities assessment to CCDG 3, USS *Lincoln*, USS *Constellation*, USS *Enterprise*, and USS *Independence* during the first use of the EHF package that is hosted on UFO-8.

GBS. COMNAVSPACECOM signed out the final System Control and Operations Concept

(SCOC) document for the Global Broadcast Service (GBS) system. Produced by the N52 branch, the document outlines policy and procedures for system operations and management of the GBS Unified CINCs (including USSPACECOM/J6), Fleet CINC, CNO and Joint Staff as tasked by CNO (N6).

UHF. Participated in the UHF SATCOM technical working group meeting hosted by the Joint Interoperability Engineering Office in Alexandria, VA. The objective was to finalize a UHF SATCOM military standard that permits terminals to operate at up to 64 kilobits per second throughout.

(6) **Information Systems Division (N6)**

(a) Program Management Office (N60). The Information Systems Division established a Program Management Office (PMO) Branch (N60) in 1997 to coordinate and consolidate project planning and tracking and provide the division director and command staff with decision making data. This office manages the Space Surveillance (Fence) Program, the Command and Control Networks, the Naval Mission Processing System, the Relocatable Over the Horizon Radar (ROTHR) program, and other command programs.

In 1998, the Program Management Office implemented a program tracking system which incorporates all division projects. This tracking system provides data used for resource allocation and to establish command/project priorities. Project alternatives and options are developed and presented to the division director and command staff for review and approval.

(1) Space Surveillance (Fence) Program (N601)

JUL 98- The Space Surveillance Program relocated from Building 1700 to Trailer 8 aboard NSWCDD in order to make space available for other activities.

AUG 98 - Approval for conceptual evaluation of the 3100-3600 MHz (S-band) frequency band for bistatic radar operation was received from Naval Computer and Telecommunications Command.

- The RF distribution system at the Lake Kickapoo transmitter station was modernized. This included new, buried fiber-optic cables for the transmitter drive signal and new distribution electronics installed in equipment racks and boxes. SPAWAR Systems Center, Charleston and Milcom Systems Corp completed this work.

SEP 98- The field station O&M contract was awarded to Chugach Telecommunications and Computers Inc. for FY99 at a cost of $6.4M. The contract time was for a base year and four option years.

- A study of the "fence" alignment by NSWCDD’s Theater Warfare Systems Department was completed. This study concluded that the alignment on the "Great Circle" is within operational tolerance for the VHF system.

- Modernization of the Jordan Lake (April 1998) transmitter station was completed. The facilities modernization included a room addition, new roof, raised floor and internal/external paint. The electronics modernization included moving the transmitter bay

drivers, installing the controller and interface electronics in equipment racks, re-cabling and antenna drive line relocation.

(2) Relocatable Over The Horizon Radar (ROTHR) Program Office (N603).

The ROTHR Program Office (RPO) is responsible for providing enhancements to the ROTHR system and managing new system installation and testing. The RPO also provides the Naval Space Command interface to the Fleet Surveillance Support Command which operates and maintains ROTHR sites in Virginia and Texas.

ROTHR Puerto. A new ROTHR site was proposed and approved for Puerto Rico. The ROTHR Puerto Rico MILCON contract was awarded to Levy and Sons Construction in February 1998. Actual construction began 16 March 98. The MILCON contractor started to turn over portions of the receiver site to Raytheon, the integration contractor, in November 1998 for installation of receiver antennas, and in December at Vieques for installation of the high-band antenna. Initial operational capability is currently scheduled for October 1999.

System Enhancements. System enhancements are engineered and implemented in accordance with user priorities, established at annual ROTHR user's meetings. These requirements, in order of priority are: improved track accuracy; detection and tracking performance for 15-meter wingspans or greater; strategic airfield surveillance in specified areas; improved interoperability with microwave radars; go-fast boat detection and tracking for greater than 20 knot targets; and cooperative aircraft transponder.

(3) NAVSPACECOM Mission Processing System (NMPS). Mission system application testing for Year 2000 (Y2K) compliance issues was completed in June 1998.

(b) Plans and Resources Branch (N61). Continued efforts regarding Year 2000 (Y2K) compliance. Specific milestones reached included:

(1) Completed initial and follow-on assessments of all NAVSPACECOM information technology (IT), facilities, and infrastructure systems and documented results. Developed funding requirements documents for those systems needing remediation.

(2) Successfully underwent DOD and CNO inspections for Y2K IT and CNO review for Y2K facilities and infrastructure tracking and regulation compliance.

(3) Briefed and provided electronic updates of our headquarter's and Echelon III IT, facilities, and infrastructure systems' Y2K status periodically to DON, DOD, and CINCSPACE audiences.

(4) Developed a Naval Space Command Mission Processing System Contingency Plan to be invoked in case of system failure during critical millennium

rollover dates. Coordinated development of contingency plans for other mission critical IT systems.

(5) Developed an interface strategy for all headquarters interfaces to ensure configuration control during Y2K upgrades.

(6) Coordinated Y2K certification efforts for mission critical systems.

(7) Served as command liaison with the Integrated Tactical Warning and Attack Assessment (ITW/AA) community. Ensured command awareness and compliance of the revised ITW/AA configuration control policy and procedures. Maintained interface with ITW/AA community representatives to ensure continuity of active tasks and to stay abreast of ongoing efforts that impacted NAVSPACECOM Mission Processing System (NMPS).

(8) Maintained the on-line NAVSPACECOM IT assessment and personal computer inventory control systems that contain critical information on all computer and telecommunication systems in the command. This data is used continually by personnel throughout the command and externally to ensure configuration control, security, maintenance, Y2K compliance and legality of all systems.

(9) Migrated to an improved automated configuration management and control system used to manage changes to the NMPS in-house developed applications software.

(10) Maintained several versions of the NMPS application software baselines during upgrade of the IBM AIX operating system and Y2K associated software changes.

(11) Played key role in development and implementation of a new NAVSPACECOM requirements process, collecting and documenting user requirements for all IT systems and components acquired for command personnel. Until the new system was implemented, continued to manage the original System Change Request process including oversight of the configuration management and information resource team working groups.

(12) Coordinated development of requirements for CINCSPACE's Command and Control Initiative Program (C2IP) and successfully obtained funding for NAVSOC's Integrated Satellite Control System and the Naval Space Support Team B-MATT systems.

(13) Managed acquisition oversight efforts resulting in approval of several five-year planning documents for NAVSPACECOM, FSSC, and NAVSOC IT systems.

(c) <u>Hardware Engineering and Integration Branch (N62)</u>

OCT 97 - Completed firewall upgrade for better Internet security.

MAY 98 - Coordinated DISN Node 88, IDNX 90 upgrade for Y2K compliance ensuring space sensors, customers, and command and control systems continued access to the NAVSPOC.

JUN 98 - Established dedicated voice communications between NAVSPOC and NASA's Johnson Space Center (JSC) at Houston for manned space flight support.

JUL 98- NSC/AEGIS/NSWC SIPRNET connectivity established.

- Classified and unclassified NT network installed to Trailer 8, supporting relocation of Space Surveillance (Fence) Program Office.

DEC 98 - NSC Unclassified NT Network installed, moving users to an unclassified office productivity environment with access to the Internet.

(d) Analysis and Software Branch (N63)

MAR 98 - Preparation began for a major operating system upgrade of the NAVSPACECOM mission system. The ORACLE database was upgraded to version 7.3.2.

JUN 98 - Renovation of the entire suite of NAVSPACECOM mission processing system applications software was completed in order to accommodate the Year 2000. The renovated software was installed on the operational system.

NOV 98 - The Naval Research Laboratory-developed Special Perturbations (SP) catalog prototype was reinstalled at NAVSPACECOM as an initial step in providing an operational SP capability in support of manned space flight safety for NASA. The prototype continues development with a planned full operational capability in March 2000.

(e) Operation and Maintenance Branch (N64)

APR 98 - Through May, Command Global Command and Control System (GCCS) clients and servers were upgraded to version 3.0.

- Through December, the command test network was reconfigured to provide a more realistic simulation of the NMPS.

SEP 98- Command GCCS servers were upgraded to version 3.0.1.

- Through December, memory upgrades were performed on the IBM workstations used with the NMPS.

DEC 98 - Parallel Virtual Machine (PVM) hardware was set up in a single rack and provided internal (PVM) and external (NMPS) network connectivity.

(f) Information Assurance (IA) Branch (N65)

The Information Assurance (IA) Branch was established within the Information System Division in July 1997 and fully staffed by fall 1998. The branch's primary responsibilities are information security and testing/quality assurance.

JUL 97- Established the Information Assurance (IA) Branch and staffed with personnel holding experience in information technology, systems administration, software development, communications, mathematics and physics. Emphasis placed on training the branch and planning the command IA posture. The management and scheduling of the test and evaluation network was established as one of the IA branch's responsibilities.

AUG 97 - Implemented the command's intrusion detection system implemented on SIPRNET access lines.

NOV 97 - Implemented the command's SIPRNET firewall system (coordinated with SPAWAR).

JAN 98 - Implemented the Internet Security Systems Network Scanner (ISSNS) to detect network security vulnerabilities on the NAVSPACOM Mission Processing System (NMPS), NT LANs, firewalls, and WEB Server. The ISSNS will be installed with the delivery of each new system into the command.

FEB 98 - Provided the required annual information security awareness training for Command. Memorandums of agreement for privately owned software and microcomputers were drafted.

JAN 98 - Installed the Internet Security System Security Scanner on the NT and UNIX hosts to detect security vulnerabilities, operating system configurations.

MAR 98 - Published the command's Automated Information System Security Plan (AISSP).

APR 98 - Published the command's Security Features Users Guide (SFUG).

- Through May, managed the redesign of the Test Network to closer reflect the operational network for future testing.

MAY 98 - Installed a Personal Computer (PC) on the Quarterdeck to scan media entering the building for viruses. Upgraded the anti-virus software for the PCs in the command. Implemented an intrusion detection system on the NIPRNET access lines.

- Received permission to use the test network for Y2K testing and all real-time testing. Managed the test system configuration and time change transition for the DT&E and OT&E for the Y2K Applications Tests.

JUL 98- Drafted test procedures and successfully completed testing of the AIX upgrade of the B Ring File Server.

AUG 98 - Published the NSC Automated Information User Agreement, the NMPS Trusted Facilities Manual, and the NMPS Security Architecture. Drafted test procedures and successfully oversaw the testing of the AIX upgrade to the Database File Server and the A Ring File Server. Submitted a vulnerability assessment (Phase I) of the NSC mission-critical nodes interfaced with Cheyenne Mountain Complex to USSPACECOM.

SEP 98- Completed the GCCS security accreditation. Published the Palm Pilot Data Transfer

Procedure. Drafted the test procedure and coordinated a successful ITW/AA Y2K Phase II end-to-end sensor test.

OCT 98 - Completed the NMPS security accreditation. Completed the Secret and Below Information (SABI) accreditation on the SNS/SMG. In October 1998, performed the IT-21 security configuration on the NT servers and installed the NORTON anti-virus software suite.

- Through November, successfully completed the Y2K ITW/AA Phase III end-to-end sensor test.

NOV 98 - Through December, completed testing of the Communication Host and Event Processor for the AIX upgrade. Submitted vulnerability assessment (Phase II) of the NSC mission critical nodes interfacing with NSC and its echelon III commands to USSPACECOM.

3. SPECIAL TOPICS

a. **Command Funding**. Actual O&M,N funding for Naval Space Command headquarters and operational element totaled $59,774K for FY97 and $54,216K for FY98 with the following breakdown:

	FY97	**FY98**
NAVSPACECOM	$24,013K	23,370K
SATCOM	1,320K	1,910K
NAVSOC Ops	15,026K	13,996K
TES	693K	613K
MSI	785K	438K
Subtotal	$41,837K	$40,327K
ROTHR	32,963K	27,885K
Total	$74,800K	$68,212K

b. **Personnel Statistics**. Authorized manpower for Naval Space Command for FY97 was 91 officers, 175 enlisted, and 259 civilians for a total of 525. Authorized manpower for FY98 was 88 officers, 175 enlisted, and 247 civilians for a total of 510.

- Naval Space Command established NAVSPACECOM Det BRAVO at Vandenburg AFB, CA (UIC 30315) on 15 Sep. Two Navy officers were assigned as Air Force Liaison officers beginning in 1999.

c. **Changes of Command**

(1) RDML Patrick D. Moneymaker, USN, relieved RDML Katharine L. Laughton, USN, as Commander, Naval Space Command, on 28 Feb 97

(2) LT Teresia J. Thompson, USN, relieved LT Tina Paco, USN, as Officer in

Charge, Joint Tactical Ground Station (JTaGS) Detachment ECHO, Chesapeake, VA in March 1998.

(3) CAPT John P. Horsman, USN, relieved CAPT William Wittmann, USN, as Officer in Charge, Naval Space Command Detachment Colorado Springs, CO in April 1998.

(4) CAPT Doug Sahrbeck, USNR, relieved CAPT Randy E. Nees, USNR, as Commanding Officer, Naval Reserve NAVSPACECOM 0166 on 19 Sep 98.

(5) CDR Christopher Fennig, USNR, relieved CDR Robert P. Wright, USNR, as Commanding Officer, Naval Reserve NAVSPACECOM 0266 on 19 Sep 98.

(6) RDML Thomas E. Zelibor, USN, relieved RDML Patrick D. Moneymaker, USN, as Commander, Naval Space Command, on 1 Oct 98.

(7) LT Tonya Wakefield, USN, relieved LCDR Sandra Jamshidi, USN, as Officer in Charge, Joint Tactical Ground Station (JTaGS) Detachment Pacific, Osan AB, Korea in December 1998.

d. **Joint Tactical Ground Station (JTAGS) Detachments**. In January 1997, the first production JTAGS objective system was successfully fielded to USEUCOM. U.S. Forces Korea received their JTAGS in April 1997. Two additional JTAGS systems were established in Colorado Springs, CO and Vandenberg AFB, CA in July 1997.

In January 1997, Naval Space Command Detachment Buckley was disestablished and Det Korea was established under a Navy officer in charge. A cadre of Navy and Army instructors was established at the USAF 533rd Training and Readiness Squadron, Vandenberg AFB, CA to train and certify JTAGS operators.

NAVSPACECOM Det ECHO and Det Korea continue to support a DOA/OPNAV memorandum of agreement by providing JTAGS operators to Germany and Korea (operations) and to Vandenburg AFB, CA (JTAGS Instructor).

Naval Space Command provided JTAGS operators in direct support of remote JTAGS development for the following exercises:

PACOM JTFEX 97-1, Feb 97

OPTIC WINDMILL II, Feb 97

HUNTER WARRIOR, Mar 97

USACOM JTFEX 97-1, Mar 97

CENTRAL ENTERPRISE, Jun 97

KERNEL BLITZ, Jun-Jul 97

PACOM JTFEX 97-2, Jul 97

CJTFEX, Jan 98

JTFEX 98-1, Apr 98

JTFEX 98-2, Apr 98

OPTIC WINDMILL, Apr 98

RIMPAC '98, Jul 98

C2F MT WITNEY, Sep 98

FOAL EAGLE 98, Nov 98

In Oct 98, the Navy established a NEC (OS 0345) for JTAGS M&D operators. As a result of the successful fielding and implementation of JTAGS, the Tactical Event Reporting System (TERS) and direct Naval Space Command TERS support to the fleet were abated. The TERS reporting requirements were met by overseas JTAGS units and CONUS-based Attack and Launch Early Reporting to Theater (ALERT), both in direct support of the Theater Event System (TES).

e. **Space Training**. NAVSPACECOM jointly sponsors the Interservice Space Fundamentals, Interservice Space Intelligence Operations Course (with Mobile Training Team), and Interservice Space Intelligence Operations Senior Course. Navy/Marine Corps throughput during FY98:

ISFC	5
ISIOC	46
ISIOC (MTT)	11
ISIOSC	12

f. **Unit Citation**. Secretary of the Navy awarded a Letter of Commendation to Naval Space Command on 16 Jun 97 for meritorious service from 1 Apr 95 to 30 Sep 96.

g. **COMNAVSPACECOM Additional Duty Assignment**. RDML Patrick D. Moneymaker served in an additional-duty capacity as Deputy Commander, Joint Task Force-Southwest Asia (JTF-SWA) at Riyadh, Saudi Arabia, from May to August 1997.

h. **Community Relations (1997)**

(1) Adopt-A-School Partnership. Continuing their partnership with Washington District Elementary School in Oak Grove, VA, Naval Space Command volunteers served as student mentors and classroom assistants during the 1996-97 school year. Special programs included:

-- Admiral's List Award, presented by COMNAVSPACECOM to students in grades K-5 who are "most improved" in their classroom at the end of each grading period.

-- Cosponsored WDES's "Space Week" on 12-23 May; coordinated student assemblies conducted by an education specialist from NASA's Langley Research Center in Hampton, VA.

-- Command volunteers served as judges for the Spring Art Show on 16 May, and for the PTA's "Reflections" literary show on 14 Nov.

(2) Command Exhibit:

-- West 97 Convention & Exposition, 22-24 Jan, sponsored by AFCEA and the U.S. Naval Institute at the San Diego Convention Center, San Diego, CA.

-- TechNet 97 Convention & Exposition, 17-19 Jun, sponsored by AFCEA at the Washington Convention Center, Washington, DC.

-- Naval Warfare Symposium, 10-11 Sep, sponsored by the U.S. Naval Institute at the Virginia Beach Convention Center, Virginia Beach, VA.

-- Space Support to the Warfighter Conference, 5 Dec, sponsored and hosted by the National Reconnaissance Office in Chantilly, VA.

(3) COMNAVSPACECOM Speeches:

-- National Space Symposium at Colorado Springs, CO, 3 Apr.

-- Annual Sailor of the Year Award Dinner at JD's Conference Center in Dahlgren on 26 Apr, sponsored by the Fredericksburg Council of the Navy League.

-- Satellite Command & Control Network Management Conference, 5 Sep.

-- Naval Space Symposia at Huntsville, AL, 23 Sep.

-- Precision Strike Symposium, Baltimore, MD, 8 Oct.

-- MILCOM 97, Monterey, CA, 4 Nov.

(4) Established a Naval Space Command home page and web site on the World Wide Web (Internet).

(5) Command members served as judges for SCI-TECH 97 King George Middle School Science Fair on 22 May.

(6) Provided literature on NAVSPACECOM in support of the July 4th "Heritage Day" celebration sponsored by the Fredericksburg Regional Chamber of Commerce at Hurkamp Park in Fredericksburg, VA.

(7) Sponsored the Naval Space Command 14th Anniversary Mini-Triathlon at Dahlgren on 4 Oct.

(8) Participated in Potomac Elementary School's Career Day for fourth through sixth graders on 12 Nov.

(9) Presented a program on space to sixth-grade class at Dahlgren School on 14 Nov.

(10) Held an Open House for command members' families in conjunction with the annual summer picnic on 27 Jun.

(11) Supported NSWCDD July 4th Committee in planning and executing holiday celebration open to the community; coordinated food booth reservations for the event.

(12) Hosted a Marine Corps Birthday Cake-Cutting Ceremony at Dahlgren on 10 Nov.

i. **Community Relations (1998)**

(1) Adopt-A-School Partnership. Continuing its partnership with Washington District Elementary School (WDES) in Oak Grove, VA, NAVSPACECOM sponsored the following programs for the 1997-98 school year:

-- Admiral's List Award, presented by COMNAVSPACECOM to students in grades K-5 who are "most improved" in their classroom at the end of each grading period.

-- Sponsored one-day teachers' workshop at WDES on 23 Jan, presented by Dr. Jerry Brown, director of education for the United States Space Foundation.

-- Coordinated volunteers for Westmoreland County spelling bee on 17 Feb.

-- Coordinated field trip to Goddard Space Flight Center in Greenbelt, MD, for fourth through sixth graders and faculty at WDES on 7 May.

-- Cosponsored WDES's "Space Week" on 18-22 May to include coordinating a student assembly and presentation by NASA astronaut and Navy Reserve CAPT Steve Oswald. The event also included a space art contest cosponsored by the U.S. Space Foundation in celebration of the 15th anniversary of NAVSPACECOM.

-- Coordinated volunteers to serve as judges for WDES Art Contest on 18 May.

(2) Command Exhibit:

-- West 98 Convention & Exposition, 14-16 Jan, sponsored by AFCEA and the U.S. Naval Institute at the San Diego Convention Center, San Diego, CA.

-- TechNet 98 Convention & Exposition (AFCEA), Washington, DC, 9-11 Jun.

(3) COMNAVSPACECOM Speeches:

-- Naval SATCOM Requirements briefing to Deputy Commander, U.S. Naval Forces Europe in London, England.

-- Naval SATCOM Requirements briefing to Commander-in-Chief U.S. European Command in Stuttgart, Germany.

-- Combined Change of Command ceremony for Navy Reserve NAVSPACECOM 0166, NAVSPACECOM 0266, SPAWAR HQ 0466, and Naval Space Reserve Program 0666 at Dahlgren, VA on 19 Sep (RDML Moneymaker).

(4) Volunteers served as judges for the King George Middle School Curriculum Fair on 26 Feb.

(5) Hosted visit by James Chiles, a free-lance writer for *Smithsonian* magazine researching U.S. space surveillance capabilities for an article in an upcoming edition of the magazine. His visit on 23 Apr included a tour of the NAVSPOC and interviews with NAVSPACECOM subject matter experts.

(6) Sponsored a 5K run-walk-skate "Space Race" at Dahlgren on 13 May in commemoration of NAVSPACECOM's 15th anniversary.

(7) Coordinated visit by free-lance photographer Kaye Chernuch for *Smithsonian* magazine to the Naval Space Surveillance Field Station at Elephant Butte, NM. Photos taken during the visit were published in January 1999 edition of the magazine accompanying the article written by James Chiles on tracking of space debris.

(8) Held an Open House for command members' families in conjunction with the annual summer picnic on 24 Jun.

(9) Supported NSWCDD July 4th Committee in planning and executing holiday celebration open to the community; coordinated food booth reservations for the event.

(10) Assisted with the organization and establishment of a new AFCEA Dahlgren Chapter. The first meeting was held on 10 Aug and the chapter charter was presented on 7 Dec.

(11) Sponsored and hosted the Naval Space Command 15th Anniversary Dinner-Dance and Dahlgren Navy Ball at the Sheraton Inn Fredericksburg on 10 Oct.

(12) Hosted Marine Corps Birthday Cake-Cutting Ceremony at Dahlgren on 10 Nov.

j. **Prominent Visitors & Meetings (1997)**

16 JAN – RDML Patrick D. Moneymaker, USN, U.S. STRATCOM (J6)

12 FEB - Brig Gen John Woodward, Jr., USAF, Director, Command & Control Systems (J6), NORAD/USSPACECOM

18 MAR – Brig Gen Wallace C. Gregson, USMC, Asst. Deputy COS for Plans, Policies and Operations (Strategy & Plans)

21 MAR – Industrial College of the Armed Forces

17 APR – Lt. Gen. Edward G. Anderson, III, USA, Commander, U.S. Army Space and Strategic Defense Command

18 APR – RDML William W. Copeland, Jr., USN, Prospective Commander, CARGRU 8

23 APR – Brig Gen Matthew E. Broderick, USMC, Director Operations Division

25 APR – Air Force Space Tactics School

29 APR – Through 8 May, Mobile Interservice Space Intelligence Operations Course (ISIOC)

21 MAY – Maj Gen Jeffrey R. Grime, USAF, Commander, Cheyenne Mtn. Operations Center

22 MAY – Ms. Susan Eckles and Mr. Patrick Conway, C4I Integration Support Office, ASD/C3I

10 JUN – Col Michael Henderson, USMC, Prospective Deputy Commander NAVSPACECOM

30 JUN - Mr. Dennis M. Nagy, Director, C4I Integration Support Activity, Office of ASD(C3I), and Mr. John L. Osterholz, Dep. Director for C4I Modeling, Simulation and Assessment (DISA)

8 JUL – Col Mark Bennett, USMC, Commanding Officer, Headquarters & Service Battalion

1 AUG- Col Robert Coe, USAF, Naval War College Chair, and LtCol Tom Clark, USAF,

Air War College Chair

1 AUG- Maj Gen Rodney P. Kelly, USAF, Director of Operations, USSPACECOM

22 AUG - Maj Richard Sponder, Acting Director, Joint Space Project, Canadian National Defence Headquarters

9 SEP – COMCARGRU EIGHT Staff

29 SEP – Gen Howell M. Estes, III, USAF, Commander in Chief, NORAD/USSPACECOM

30 SEP – Col John Kugler, USAF, USSPACECOM Inspector General Staff

21 OCT – Mr. John Marrs, Director, Advanced Concepts & Technology Support Office,

U.S. Army Space Command (Forward)

5 NOV – Maj Henk H. F. Smid, Royal Netherlands Air Force, Netherlands Ministry of Defense

7 NOV – CAPT Scott Thompson, USN, Director, Space Systems Division (OPNAV N63)

14 NOV – RADM Robert M. Nutwell, USN, Deputy Director, Space Information Warfare, Command and Control (OPNAV N6)

18 NOV – VADM Herbert A. Browne, Jr., USN, Commander Third Fleet

20 NOV – CAPT Bruce Buckley, USN, Commanding Officer, Naval Research Laboratory

10 DEC – CDR M. J. Dale, Royal Navy, Permanent Support Coordination Group, AUSCANNZUKUS Naval C3 Organization

19 DEC – Mr. David Lemon, CINCPACFLT Space Rep, and Mr. Tom Myers, CINCLANTFLT Space Rep

k. **Prominent Visitors & Meetings (1998)**

26 JAN – RDML Jay A. Campbell, USN, Prospective Commander, CARGRU SEVEN

29 JAN – Maj Gen Reese R. Nielsen, USAFR, Reserve Mobilization Asst. to CINCSPACE

6 FEB – Maj Gen Jeffrey R. Grime, USAF, Commander, Cheyenne Mtn. Operations Center

10 FEB – RDML Robert G. Sprigg, USN, Prospective Commander, CARGRU TWO

19 FEB – Air Force Weapons School Students

23 FEB – Through 6 Mar, Interservice Space Intelligence Operations Course (ISIOC)

10 MAR – Navy JROTC Cadets, King George High School

12 MAR – Ms. Daryll Nottingham, Deputy COS for Contracting, U.S. Army Space Command

18 MAR – Maj Gen Robert S. Dickman, USAF, DOD Space Architect

18 MAR – Mr. Stephen Oswald, Deputy Assoc. Administrator for Space Shuttle, NASA

19 MAR – CAPT Kevin Cheesebrough, USN, COMSUBLANT (N6)

26 MAR – CDR Michael Murray, USN, Deputy Asst. Director for Space Policy, Deputy Under Secretary of Defense (Space)

27 MAR – Col Scott B. Cottrell, USA, Commander, U.S. Army Kwajalein Atoll/Kwajalein Missile Range

16 APR – Fleet Information Warfare Center (FIWC) Team

29 APR – RDML Alfred G. Harms, Jr., USN, Prospective Commander, CRUDESGRU EIGHT

1 MAY – Navy Space Systems Division (OPNAV N63) Staff Visit

2 JUN – VADM Henry Giffin, USN, Commander, Naval Surface Force, U.S. Atlantic Fleet

14 JUL – Dr. Daniel E. Hastings, Air Force Chief Scientist

18 AUG - RDML Lillian E. Fishburne, USN, Director, Navy Space Systems Division

(OPNAV N63)

26 AUG - RDML Uwe Kahre & German Armed Forces Command & Staff College Students

9 NOV – VADM Robert J. Natter, USN, Director, Space, Information Warfare, Command and Control (OPNAV N6)

20 NOV – Strategic Studies Class, Johns Hopkins University

15 DEC – Brig Gen Thomas L. Baptiste, USAF, Commander, Cheyenne Mtn Operations Center

T. E. ZELIBOR

Copy to:

List II

NAVSPACECOM DET Colorado Springs

NAVSOC (00)

FLTSURVSUPPCOM (00)

USSPACECOM (HO)